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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,812	03/18/2004	Lee Begeja	2003-0059 (ATT.0180000)	5880

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Law Office of Duane S. Kobayashi
1325 Murray Downs Way
Reston, VA 20194

EXAMINER

HAN, QI

ART UNIT	PAPER NUMBER
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2626

MAIL DATE	DELIVERY MODE
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11/07/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/802,812

Applicant(s)

BEGEJA ET AL.

Examiner

Qi Han

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 18 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 03/31/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Information Disclosure Statement

1. The references listed in the Information Disclosure Statement submitted on 03/31/2005 have been considered by the examiner (see attached PTO-1449).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 9-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 9, it recites “a spoken dialog system, comprising a natural language understanding model trained using a method...”, which substantially is a single means claim because the means recitation does not appear in combination with another recited element of means. It is noted that a single means claim, where the claim covers every conceivable structure (means) for achieving the stated property (result) while the specification discloses at most only those known to the inventor, is subject to an undue breadth rejection under 35 USC 112 1st (see MPEP 2164.08(a)).

Regarding claims 10-16, the rejection is based on the same reason described for claim 9, because the dependent claims include the same or similar problematic limitation(s) as claim 9.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 5-6, 8-11, 13-14 and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over ARAI (US 6,173,261) in view of ATTWATER et al. (US 6,839,671) hereinafter referenced as ATTWATER.

As per **claim 1**, ARAI discloses 'grammar fragment acquisition using syntactic and semantic clustering' (title) 'for recognizing and understanding fluently spoken languages' (abstract), comprising:

"collecting a plurality of utterances" (Fig. 9 and col. 9, lines 14-8, 'database (collection) of a large number of utterances');

"generating a plurality of call types each having utterances selected from said collection of utterances, said utterances used to generate said plurality of call types representing a first set of utterances which is a subset of said collection of utterances" (col. 2, lines 13-35, 'clustering phrases into grammar fragments' that are associated to the utterances, 'each representing a set of syntactically and semantically similar phrases' and used to 'determine a call classification'; Fig. 9 and col. 9, line 1 to col. 10, line 45, 'a set of candidate phrases having a probabilistic

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relationship with one or more of the set of predetermined routing objectives (including call types) with which the input speech utterances are associated', 'call-type classification (generating call types)'; Fig. 2, also showing call types having/associating the training transcriptions (corresponding to the first set of utterances));

"generating a first natural language understanding model using call type information contained within said first set of utterances" (col. 2, lines 6-9 and 20-35, 'to utilize these grammar fragments (associating corresponding utterances) in language models (interpreted as natural language understanding models) for both speech recognition and understanding', 'salient sequences of these fragments may then be automatically acquired, which are then exploited by a spoken understanding module to determine a call classification'; Figs. 11a-11c and col. 10, lines 30-45, 'as a consequence of this expansion, a fully expanded salient fragment network (also corresponding to the first natural language understanding model) is obtained (generated)');

"testing said first natural language understanding model" (col. 9, lines 61-67, 'recognition language model (natural language understanding model)', 'the training transcription contained 7,800 sentences while the test transcription contained 1000 sentences', which implies testing the language model);

Even though ARAI discloses that the grammar fragments formed from candidates phrases that generated from the training transcription (based on the testing) can be sorted based on call types (col. 6, lines 39-53), ARAI does not expressly disclose "**modifying** said plurality of call types based on said testing" and "**generating a second** natural language understanding model using said modified plurality of call types". However, the feature is well known in the art as evidenced by ATTWATER who discloses 'learning of dialogue states and language model of

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spoken information system' (title) for creating 'a dialog model' using a training corpus of example human-human dialogues (abstract), comprising 'a natural language call steering system' in that 'the received speech utterance is analysed by the recognizer with reference to a language model' and using 'semantic model to form a semantic classification' that provides classifiers according to a predefined set of meanings (corresponding to call types) (col. 3, line 60 to col. 4, line 14), and teaches that 'the sentences in supervised training corpus 42 are clustered using clustering algorithm' and 'clusters thus generated are manually checked' in which the words/phrases can be deleted or substituted (modified) in forming a cluster (col. 6, lines 1-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to recognize that supervised training with manually checked clusters would provide capability of modifying the clusters/classes for the transcribed data so as to form a different a language model, and to modify ARAI by combining the feature of using a candidate set of grammar fragments associating the clustered call-types in the training transcription disclosed by ARAI (col. 3, lines 1-60) and the feature of using supervised training and/or manually checking (or transcribing) clusters with modifying capabilities, such as deleting or substituting, as taught by ATTWATER (col. 6, lines 1-22), so that the call type of the candidate fragments associating the utterances/transcription can be manually modified and another fully expanded salient fragment network (second natural language understanding model) can be generated, for the purpose (motivation) of generating more accurate transcriptions and/or improving call-type classification performance for the system (ATTWATER: col. 6, lines 30-31; ARAI: col. 10, lines 21-22).

As per **claim 2** (depending on claim 1), ARAI in view of ATTWATER further discloses “generating an annotation guide using a second set of utterances which is a subset of said first set of utterances” (ATTWATER: Fig. 3 and col. 5, lines 13-14, ‘nodes... have been annotated with operator utterance’; col. 11, lines 33-35, ‘each call in the corpus can be annotated according to the cluster of each operator utterance in the call’, wherein the content of labels 26 in Fig.3, such as ‘greeting’, can be reasonably interpreted as generated annotation guide as claimed; ARAI: Fig.11C also suggests that the utterances corresponding to phrase ‘collect call’ (or ‘collect phone call’) is a subset of the utterances of the consequence expansion (the model), so that it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings from ARAI and ATTWATER by providing generated annotation (annotation guide) using a subset of utterances of the consequence expansion, for the purpose (motivation) of generating more accurate transcriptions and/or improving call-type classification performance for the system (ATTWATER: col. 6, lines 30-31; ARAI: col. 10, lines 21-22)).

As per **claim 3** (depending on claim 1), ARAI in view of ATTWATER further discloses “generating call type data using at least **one of** data clustering, relevance feedback, string searching, data mining, and active learning tools” (ARAI: Fig. 9, ‘grammar fragment (data) clustering’; ATTWATER: col. 5, lines 61-65, ‘dynamic programming (DP) match (string searching)’).

As per **claim 5** (depending on claim 1), ARAI in view of ATTWATER further discloses “said first natural language understanding model is trained using a first text file containing utterances contained within said first set of utterances and a second text file containing call types assigned to said utterances in said first text file” (ARAI: Fig. 9 and col. 9, line 4 to col. 10, line

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45, wherein the 'database' with labeled utterances and training transcriptions necessarily include text file/table (first text file) linking (containing) the corresponding utterances, and the phases (text) classified with call types are also necessarily stored in a file or table (second text file) and linked (assigned) to the corresponding utterances; also see Figs. 7A-7C and 11A-11C).

As per **claim 6** (depending on claim 1), ARAI in view of ATTWATER further discloses "said natural language understanding model is tested using a subset of said first set of utterances" (ARAI: Fig. 9, 'test speech utterance' and 'input speech').

As per **claim 8** (depending on claim 1), ARAI in view of ATTWATER further discloses "said first natural language understanding model is created prior to an annotation guide" (ATTWATER: Fig. 3, wherein the content of labels 26, such as 'greeting', is interpreted as generated annotation guide; col. 11, lines 33-35, 'once the sentences in the training database have been clustered ... each call in the corpus can be annotated **according to the cluster** of each operator utterance in the call', which suggests the model is created prior to the annotation (guide)).

As per **claims 9-11, 13-14 and 16**, as best understood in view of the claim rejection under 35 USC 112 1st (see above), the rejection is based on the same reason described for claims 1-3, 5-6 and 8, because the claims recite the same or similar limitation(s) as claims 1-3, 5-6 and 8 respectively.

As per **claims 17-20**, the rejection is based on the same reason described for claims 1-2 and 5-6, because it also reads on the limitations of claims 1-2 and 5-6 respectively.

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4. Claims 4, 7, 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over ARAI in view of ATTWATER as applied to claims 1 and 9, and further in view of MAES et al. (US 2003/0088421) hereinafter referenced as MAES.

As per **claim 4** (depending on claim 3), even though ARAI in view of ATTWATER discloses generating call types, as stated above, ARAI in view of ATTWATER does not expressly disclose “using a graphical user interface (GUI).” However, the feature is well known in the art as evidenced by MAES who discloses ‘application that supports multi-modal’, ‘conversational applications’ utilizing ‘NLU (natural language understanding)’, ‘multi-modal interactive dialog comprises modalities such as speech, visual (GUI)...and a combination of such modalities (e.g. speech and GUI)’ (p(paragraph)46); and ‘multi-modal browser application comprise a GUI browser’ (p73). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify ARAI in view of ATTWATER by combining the feature of generating call types as stated for claims 1 and 3, with feature of supporting multi-modal applications including using GUI, as taught by MAES, for the purpose (motivation) of better disambiguating and understanding the user’s intention and/or displaying the related presenting and updating information (MAES: p46, p244).

As per **claim 7** (depending on claim 1), the rejection is based on the same reason described for claim 4, because the claim recites the same or similar limitation(s) as claim 4.

As per **claim 12** (depending on claim 11), the rejection is based on the same reason described for claim 4, because the claim recites the same or similar limitation(s) as claim 4.

As per **claim 15** (depending on claim 9), the rejection is based on the same reason described for claim 4, because the claim recites the same or similar limitation(s) as claim 4.

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Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qi Han whose telephone numbers is (571) 272-7604. The examiner can normally be reached on Monday through Thursday from 9:00 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil, can be reached on (571) 272-7602.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: ebc@uspto.gov. For general information about the PAIR system, see <http://pair-direct.uspto.gov>.

QH/qh
October 29, 2007

 11/04/07